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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/244,270	02/03/1999	LORDSON L. YUE	M-7019-US	3568

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SKJERVEN MORRILL MACPHERSON LLP
25 METRO DRIVE
SUITE 700
SAN JOSE, CA 95110

EXAMINER

CHUNG, DANIEL J

ART UNIT

PAPER NUMBER

2672

DATE MAILED: 11/27/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/244,270

Applicant(s)

YUE ET AL.

Examiner

Daniel J Chung

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claims 1-17 are presented for examination. This office action is in response to the Amendment filed on 10-1-2001.

The objection to the drawing has been maintained.

Specification

Please review the application and correct all informalities.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aleksic (5,914,722) in view of Lentz et al (5,446,836), and further in view of Wong et al (6,034,699).

Regarding claim 1, Aleksic discloses that the claimed feature of a method (See Fig 2, Fig 4A-4B, col 2 line 65-col 3 line 27) comprising:

Receiving vertex data corresponding to first, second and third vertices of a triangle (See Fig 2, col 2 line 24-28)

Generating region bits representing a location each of the first, second, and third vertices with respect to a tile [17;a memory page] being rendered (See Fig 2, Fig 4A, Fig 4B, col 2 line 54-59, col 2 line 65-col 3 line 27, col 4 line 55+)

Generating coordinate data representing an initial rasterization starting point estimate based in part on the region bits. (See Fig 2, Fig 4A, Fig 4B, col 2 line 54-59, col 2 line 65-col 3 line 27, col 4 line 55+)

Providing the initial rasterization starting point estimate to a rasterizer. (See Fig 2, Fig 4A, Fig 4B, col 2 line 54-59, col 2 line 65-col 3 line 27, col 4 line 55+)

Aleksic does not specifically disclose that the estimated rasterization starting point. However, Lentz et al teaches that the method of finding the starting raster points by using the vertices of the polygon. (See Fig 4A, Fig 4B, Fig 5, Fig 6, Fig 9, col 3 line 36-col 4 line 46) The motivation would have been to decreasing a substantial time of the rasterization efficiently, as mentioned in Lentz et al (See col 3 line 36-col 4 line 46). Therefore, it would have been obvious to one skilled in the art to incorporate the teaching of Lentz et al into the teaching of Aleksic.

Also, Aleksic does not explicitly disclose that "generating an initial rasterization starting point based on the region bits." However, Wong et al discloses that the

determining the initial starting point of the scanning process [in the step of "rasterization"] based on the angular orientation of the edge ["the region bits"] of the polygon. (See Abstract, Fig 7, Fig 9-10, Fig 11-13, Fig 15, col 2 line 27-col 3 line 51, col 4 line 33-49, col 5 line 31-col 7 line 34, col 7 line 55-col 8 line 44) The motivation would have been to minimize the time required to scan/render the polygon, as mentioned in Wong et al. (See col 2 line 62-64) Therefore, it would have been obvious to one skilled in the art to incorporate the teaching of Wong et al into the teaching of Aleksic.

Regarding claim 2, Aleksic discloses that generating, in the circuit, an orientation bit representing an orientation of a line connecting the first and second vertices with a line connecting the first and third vertices. (See Fig 2, Fig 4A, Fig 4B, col 2 line 54-59, col 2 line 65-col 3 line 27, col 4 line 55+)

Aleksic does not explicitly disclose that representation of orientation bit. However, Lentz et al teaches that using orientation of triangles to classify or organize the triangle variable for faster and easier rasterization process. (See col 5 line 58-64, col 7 line 38-51) The motivation would have been to improve faster rasterization process by providing the x-y coordinate data of each vertex in different coordinate system with easy manner. Therefore, it would have been obvious to one skilled in the art to have orientation bit into the teaching of Aleksic.

Regarding claim 3, Aleksic discloses that sorting the first, second and third vertices according to a position in a predetermined direction. (See Fig 2, Fig 4A, Fig 4B, col 2 line 54-59, col 2 line 65-col 3 line 27, col 4 line 55+; Also See Fig 9-11, col 5 line 31-col 6 line 67 in Wong et al)

Regarding claims 4 and 5, claims 4 and 5 are similar in scope to the claims 1 and 2, and thus the rejections to claims 1 and 2 hereinabove are also applicable to claims 4 and 5.

Regarding claim 6, refer to the discussion for the claim 1 hereinabove, Lentz et al further discloses that a rasterizer configured to receive the initial rasterization starting point estimation circuit coordinates. (See Fig 4A, Fig 4B, Fig 5, Fig 6, Fig 9, col 3 line 36-col 4 line 46)

Regarding claim 7, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that the step of generating the initial rasterization starting point further comprises discarding triangles when the vertices correspond to locations outside the tile represented by the region bits. (See Abstract, Fig 7, Fig 13, col 2 line 47-col 3 line 51)

Regarding claim 8, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that the initial rasterization starting point is defined by the intersection of the sorted vertices and the position represented by the region bits. (See Fig 7, 13, 9-10)

Regarding claim 9, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that an interception calculation circuit operative to provide a coordinate dependent initial rasterization starting point in response to the region bits and the vertex data. (See Abstract, Fig 7, Fig 13, col 2 line 47-col 3 line 51)

Regarding claim 10, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that the initial rasterization starting point estimation circuit includes a trivial accept circuit operative to provide the initial rasterization starting point in response to the region bits. (See Abstract, Fig 7, Fig 13, col 2 line 47-col 3 line 51)

Regarding claim 11, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that the trivial accept circuit comprises a logic gate coupled to a corresponding subset of the region bits. (See Fig 7, 13, 9-10, 15)

Wong et al does not disclose that "logic gate". However, logic gate is inherent by the any image processing circuitry, in order to produce any arithmetic calculation in image processing system. Therefore, it would have been obvious to one skilled in the art to include the logic gate into the teaching of Aleksic.

Regarding claim 12, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that the logic gate is an AND gate. (See Fig 7, 13, 9-10, 15)

Regarding claim 13, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that the region bits define the top edge, bottom edge, right edge and left edge of a current tile being rendered. (See Fig 9, 10, 11-12, col 2 line 5-25)

Regarding claim 14, claim 14 is similar in scope to the claim 4, and thus the rejection to claim 4 hereinabove is also applicable to claim 14.

In addition, Aleksic discloses that the claimed feature of a sorting circuit operative to provide sorted vertex data in response to input data corresponding to vertices of a primitive, the vertex data being sorted in a coordinate-dependent fashion, the vertex data including x-coordinate and y-coordinate position information (See Fig 2, Fig 4A, Fig 4B, col 2 line 54-59, col 2 line 65-col 3 line 27, col 4 line 55+; Also See Fig 9-11, col 5 line 31-col 6 line 67 in Wong et al)

Regarding claim 15, claim 15 is similar in scope to the claim 10, and thus the rejection to claim 10 hereinabove is also applicable to claim 15.

Regarding claim 16, refer to the discussion for the claim 1 hereinabove, Wong et al discloses that the vertex data is sorted in y-coordinate fashion and the trivial accept circuit provides the x-coordinate and sorted y-coordinate rasterization starting point of a non-discarded primitive. (See Abstract, Fig 7, Fig 13, col 2 line 47-col 3 line 51)

Regarding claim 17, claim 17 is similar in scope to the claim 9, and thus the rejection to claim 9 hereinabove is also applicable to claim 17.

Response to Amendment/Argument

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Chung whose telephone number is (703) 306-3419. He can normally be reached Monday-Thursday and alternate Fridays from 7:30am- 5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael, Razavi, can be reached at (703) 305-4713.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

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Art Unit: 2672

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djc
November 12, 2001

A handwritten signature in black ink, appearing to read 'Matthew Luu', with a stylized flourish at the end.

MATTHEW LUU
PRIMARY EXAMINER